

## REMARKS

Claims 1, 2, 5-33 are now pending in the application. Claims 3-4, 12, 24-28 and 31-33 are cancelled. Claims 1, 5-10, and 29 have been amended. Support for the amendments to the claims is found throughout the Applicants' application as originally filed and at Paragraphs 26 and 51, for example. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

## REJECTION UNDER 35 U.S.C. § 112

Claims 5-10 stand rejected under 35 U.S.C. § 112, second paragraph, as having an insufficient antecedent basis for the limitation recited as "said at least one component." This rejection is respectfully traversed.

Applicants have amended Claims 5-10 to include reference to "said component" rather than "said at least one component," and respectfully submit that the Examiner's rejection is now moot and should be withdrawn.

## REJECTION UNDER 35 U.S.C. §§ 102 AND 103

Claims 1, 17-23 and 29 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Kobayashi et al. (U.S. Pat. Pub. No. 2002/0098396) (hereinafter "Kobayashi"). This rejection is respectfully traversed.

Claims 2 and 5-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kobayashi. This rejection is respectfully traversed.

Claims 3, 4, 11, 13-15 and 30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kobayashi in view of Ishikawa et al. (U.S. Pat. No. 4,609,038) (hereinafter “Ishikawa”). This rejection is respectfully traversed.

Claim 16 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Kobayashi in view of Ishikawa, as applied to Claim 15 above, and further in view of Shreir et al. (Corrosion (3<sup>rd</sup> Edition)) (hereinafter “Shreir”). This rejection is respectfully traversed.

Claims 3-4 have been cancelled. Independent Claims 1 and 29 have been amended to recite a heating element having an opening and a filter disposed between the opening and the channel or cavity that stores the hydrogen storage material. This feature is not found in any of the cited references.

The Koyabashi reference provides an independent heating system for a fuel cell system, however, does not describe or suggest an opening and a filter having a pore size that is less than an average pore size of the particle form of the hydrogen storage material, as recited in the present claims. For example, Koyabashi generally describes a metal hydride tank, however contains no description or suggestion that the metal hydride may have a filter in an opening of a channel or cavity to retain hydrogen adsorption materials in particle form within channels provided within the storage vessel. See e.g., Paragraph 89. Thus, Koyabashi does not describe each and every limitation of the claimed invention and does not anticipate, nor does it render obvious, the rejected claims.

The Ishikawa reference does not account for this deficiency, but rather teaches away from the invention recited in amended independent Claims 1 and 29. The porous

material set forth in Ishikawa is a structural support for hydride particles interspersed within its pores. An object of Ishikawa is to prevent the eventual loss of hydrogen adsorption capacity of metal hydride particles due to decay, micronization, and settling within the storage bed. See e.g., Col. 1 lines 32-38; Col. 2 lines 25-44. To solve such an issue, Ishikawa describes bonding (compression molding) the metal hydride particles within a porous metal structure to form a “compact.” Col. 3 lines 24-31. To achieve this, the “fine particles [of alloy] are infiltrated into the inner vacant spaces of the porous material through pores on the surface thereof by vibrating the whole. *It is necessary* for every vacant space to be in communication with the surface of the foamed member as well as *to have a larger pore diameter than that of each of the fine particles.*” (emphasis added) Col. 5 lines 59-65; See also, Col. 6 lines 14-20.

Thus, Ishikawa teaches that a pore diameter of the porous member should always be larger than the metal hydride particle size (generally suggesting a pore size of the porous material to be 1 to 3 mm) to permit impregnation of fine alloy particles therein. After impregnation, the fine particles are compression molded with the porous structure to form a single integral “compact” structure. See for example, Col. 5 line 66-Col. 6 line 5. Ishikawa fails to describe a filter of any sort, and moreover teaches away from a filter, because it requires using a porous material that has a pore size far greater than an average particle diameter of a hydride alloy.

“Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching suggestion or incentive supporting the combination.” *In re Geiger*, 2 USPQ.2d 1276, 1278 (Fed. Cir. 1987). The Examiner relies upon the Applicants’ invention to provide any potential motivation,

stating that "it would be desirable to provide pores in the hydrogen outlet to allow hydrogen to leave the tank, but prevent metal hydrides from leaving and possibly contaminating the fuel cell stack." Office Action dated January 11, 2007 at Page 6. However, this rationale impermissibly relies upon the teachings of the Applicants' specification (hindsight) to provide the motivation necessary to arrive at the claimed inventive feature. There is no objective teaching whatsoever of using a filter between a channel of hydrogen adsorption material and an opening in a heating element for a fuel cell, thus, Koyabashi and Ishikawa fail to provide any suggestion or motivation necessary to support the combination to arrive at the amended claims.

The Sheir reference merely describes corrosion resistance properties of aluminum based alloys and fails to provide any suggestion, motivation, or teaching to arrive at the claimed invention. Thus, none of the cited references, standing alone or in combination, teach each and every limitation of the claimed invention. As such, Applicants respectfully submit that Claims 1-2, 5-11, 13-23, and 29-30 are in condition for allowance and request reconsideration of the rejections.

## CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the

Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: April 11, 2007

By: Jennifer Woodside Wojtala

CORRESPONDENCE ADDRESS:  
Charles Ellerbrock, Esq.  
General Motors Corporation  
Legal Staff - Mail Code 482-C23-B21  
PO Box 300 - 300 Renaissance Center  
Detroit, Michigan 48265-3000  
Ph: 313-665-4708  
Fax: 313-665-4976

Anna M. Budde  
Reg. No. 35,085

Jennifer M. Woodside Wojtala  
Reg. No. 50,721

HARNESS, DICKEY & PIERCE, P.L.C.  
P.O. Box 828  
Bloomfield Hills, Michigan 48303  
(248) 641-1600

JMW/slq